ENCLOSURE G.1

BIOLOGICAL ASSESSMENT FOR ENDANGERED SPECIES IN OUTER CONTINENTAL SHELF WATERS OF SOUTH AND CENTRAL CALIFORNIA FOR CONSULTATION WITH THE NATIONAL FISHERIES MANAGEMENT SERVICE

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Submitted to:
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Washington, D.C.

and

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LIST OF ACRONYMS

NMFS	National Marine Fisheries Service
OCS	Outer Continental Shelf
MMS	Minerals Management Service
NPDES	National Pollutant Discharge Elimination System
DMR	Discharge Monitoring Report
CWA	Clean Water Act
ESA	Endangered Species Act
MMPA	Marine Mammal Protection Act
USFWS	U.S. Fish and Wildlife Service
EFH	essential fish habitat

1.0 INTRODUCTION

The purpose of this biological assessment is to identify the potential for and types of impacts to federally-listed or proposed species that could occur as a result of EPA's proposal to reissue its general National Pollutant Discharge Elimination System (NPDES) permit for offshore oil and gas exploration, development and production facilities located in federal water off Southern California. This assessment should provide the basis for consultation with the National Marine Fisheries Service (NMFS) under Section 7 of the Endangered Species Act (ESA). There are 22 existing production platforms located in federal waters of the Outer Continental Shelf (OCS) (beyond the 3-nautical mile territorial limit within the lease blocks shown in Figure 1) between Huntington Beach and just north of Point Arguello. From south to north, the platforms are identified as Eureka, Ellen/Elly, Edith, Gina, Gail, Gilda, Grace, Habitat, Hogan, Houchin, Henry, Hillhouse, A, B, C, Hondo, Harmony, Heritage, Hermosa, Harvest, Hildago, and Irene. New production platforms would not be covered by the new general permit; however, discharges from future exploratory operations would be covered. All exploration which may occur during the term of the general permit would also occur within the lease blocks shown in Figure 1. OCS oil and gas developments are also regulated by the Minerals Management Service (MMS).

1.1 PROJECT DESCRIPTION

Normal operations at oil and gas exploration, development, and production facilities result in a number of discharges that require permitting under the NPDES program of the Clean Water Act (CWA). The proposed action is to renew the general NPDES permit for these discharges from the offshore facilities for 5 years beginning in mid 2000.

1.1.1 Discharges Covered

The discharges to be permitted include the following:

- Drilling fluids and cuttings (Discharge 001)
- Produced water (Discharge 002)
- Well treatment, completion, and workover fluids (Discharge 003)
- Deck drainage (Discharge 004)
- Domestic and sanitary waste (Discharge 005)
- Blowout preventer fluid (Discharge 006)
- Desalination unit discharge (Discharge 007)
- Fire control system water (Discharge 008)
- Non-contact cooling water (Discharge 009)
- Ballast and storage displacement water (Discharge 010)
- Bilge water (Discharge 011)
- Boiler blowdown (Discharge 012)
- Test fluids (Discharge 013)
- Diatomaceous earth filter media (Discharge 014)
- Bulk transfer operations (Discharge 015)
- Uncontaminated water (Discharge 016)
- Water flooding discharges (Discharge 017)

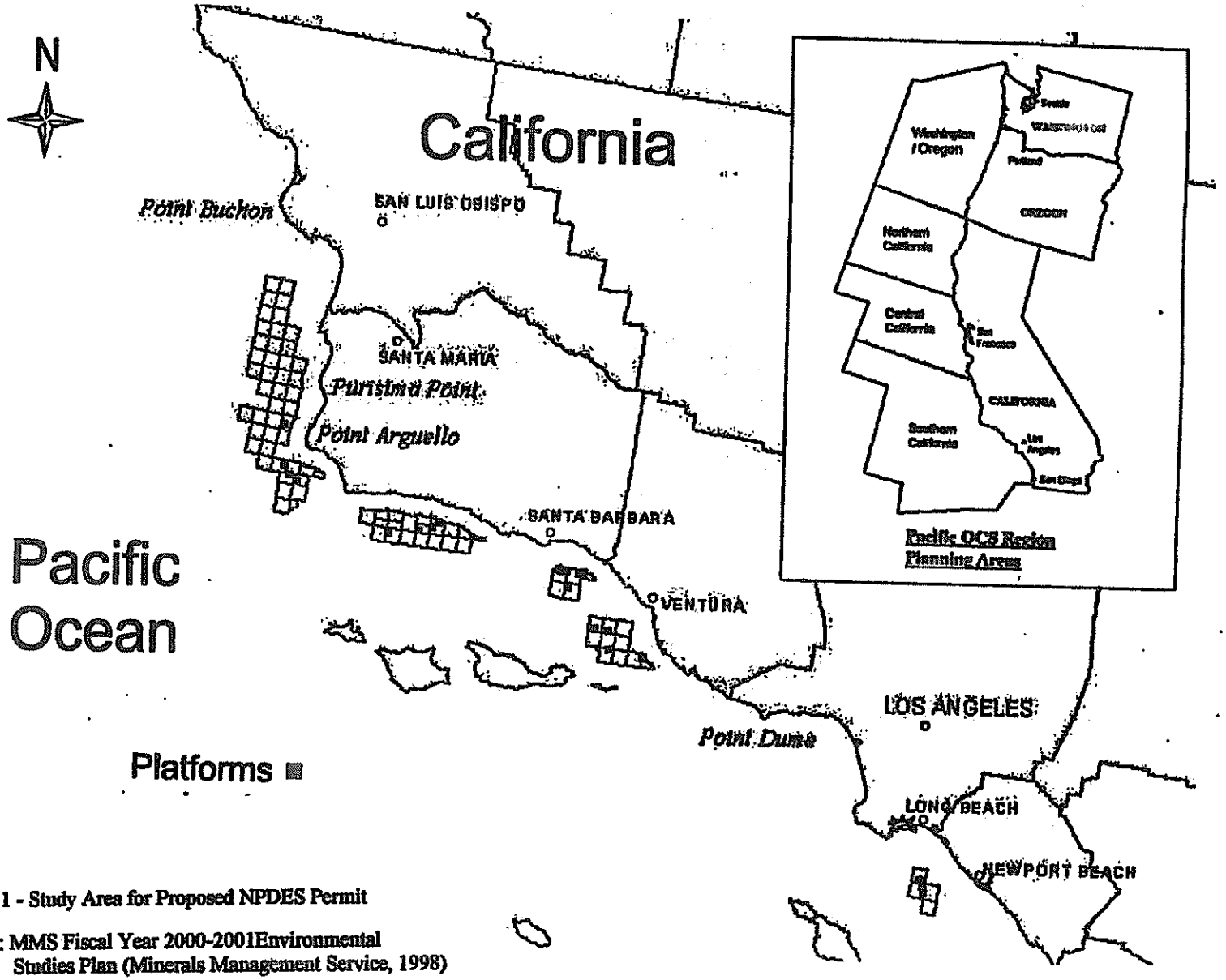

Figure 1 - Study Area for Proposed NPDES Permit

Source: MMS Fiscal Year 2000-2001Environmental Studies Plan (Minerals Management Service, 1998)

- Laboratory waste (Discharge 018)
- Excess cement slurry (Discharge 019)
- Muds, cuttings, and cement at sea floor (Discharge 020)
- Hydrotest water (Discharge 021)
- H_2S gas processing waste water (Discharge 022)

MMS estimates that 40-50 development wells will be drilled during the permit term from existing production platforms; 5-6 exploratory wells are anticipated (personal communication from Dave Panzer to EPA, Region 9). Exploratory wells are drilled from exploratory drilling vessels (which are typically onsite only a few months) which have similar discharges as production platforms with the exception of produced water. Given the small number of exploratory wells anticipated to be drilled, the short-term nature of the operations, and the absence of produced water discharges, the potential impacts from exploratory operations are expected to be low in comparison to production platforms.

The permit covers produced water discharges treated on offshore platforms as well as discharges into the lease blocks from onshore facilities (produced water treatment facilities) operating in support of the platforms. The allowed mixing zone is the larger of 100 meters laterally around the discharge point from the sea surface to the sea floor, or to the boundary of the zone of initial dilution as calculated by a plume model (or other method approved by the Environmental Protection Agency [EPA]).

Discharges that are not part of normal operations, such as spills and other unintentional or non-routine discharges of pollutants, are not authorized under this permit, nor are discharges to wetlands adjacent to the territorial seas and inland coastal waters of the State of California.

1.1.2 Effluent Limitations and Monitoring Requirements

The general permit establishes effluent limitations, prohibitions, reporting requirements, and other conditions for these discharges. Specific requirements are given individually for discharges 001 through 005, while requirements for the remaining discharges are combined.

For drilling fluids and cuttings no free oil, oil-based fluids or diesel oil can be discharged. The concentration of cadmium and mercury in barite which is used in drilling mud is limited to 3 mg/kg and 1 mg/kg, respectively. Bioassay toxicity testing is required for drilling fluids and cuttings which are discharged. An inventory of all drilling fluid constituents used in each well is required to be reported to the EPA. The total annual discharge volumes for cuttings, drilling fluids, and excess cement are specified for each platform in the permit.

For produced water, sampling is required to determine if the discharge is likely to exceed water quality criteria shown in Table 1.

The discharge of oil and grease is limited to 29 mg/l monthly average and 42 mg/l daily maximum, as sampled weekly. The maximum volume of produced water discharge allowed each year for each platform is specified in the permit. Specifications for chronic toxicity testing of the discharges are also specified.

For well treatment, completion, and workover fluids, the effluent limitations include no free oil discharge and oil and grease concentrations not to exceed the same levels as required for produced water.

Deck drainage effluent limitations specify no free oil discharge.

For domestic and sanitary wastes, no discharge of floating solids or foam is allowed. Total residual chlorine in sanitary waste discharges must be a minimum of 1 mg/l. No food waste discharge is allowed within 12 nautical miles of the nearest land.

For miscellaneous discharges 006 through 022, effluent limitations include no free oil and monitoring is required for chlorine in the fire control system test water, non-contact cooling water, and hydrotest water.

Other discharge conditions and limitations include:

1. Discharge of surfactants, dispersants, and detergents shall be minimized except as necessary to comply with the safety requirement of the MMS and Occupational Health and Safety Administration (OSHA). Discharge of dispersants to marine waters in response to oil or other hazardous spills is not authorized.

2. No discharge of diesel oil, halogenated phenol compounds, or chrome lignosulfonate.

3. No discharge of produced sands.

4. Radioactive tracer concentrations above background levels shall be limited in accordance with 10 CFR 20 Appendix B.

1.1.3 Monitoring, Recording, and Reporting Requirements

Monitoring shall be in accordance with test procedures approved under 40 CFR Part 136 unless other procedures have been specified in the permit. Samples for monitoring shall be representative of the monitored activity. For reporting, monitoring results shall be summarized each month on the Discharge Monitoring Report (DMR) form and submitted to EPA quarterly. Any monitoring results taken in addition to those required by the permit and using the approved test procedures shall be included in the data submitted in the DMR. Records of all monitoring shall be kept for a minimum of 3 years. Non-compliance incidents that may endanger health or the environment shall be reported orally within 24 hours from the time the permittee becomes aware of the incident with written notice following within 5 days.

1.2 DATA SOURCES

Information on the species covered in this biological assessment was obtained from published literature, the Internet, and contacts with local specialists.

Table 1. Produced Water Reasonable Potential Sampling Requirements

Constituent	*Water Quality Criteria (ug/l)*[1]
Ammonia	1,300[2]
Arsenic	36
Cadmium	1
Lead	8.1
Manganese	100
Mercury	0.051
Nickel	8.2
Selenium	71
Silver	1.9
Zinc	81
Benzene	71
Benzo(a)anthracene	0.049
Benzo(a)pyrene	0.049
Chrysene	0.049
Benzo(k)fluoranthene	0.049
Benzo(b)fluoranthene	0.049
Dibenzo(a,h)anthracene	0.049
Hexavalent chromium	50
Phenolic compounds	4,600,000
Toluene	200,000
Ethylbenzene	29,000
Naphthalene	Not available
2,4-dimethylphenol	2,300
Undissociated sulfides	2
Whole effluent toxicity	1 TUc

1 Federal criteria applicable after dilution at the end of the mixing zone.
2 Assumes an ambient ocean temperature of 15 °C, salinity of 30 g/kg and pH of 8.1. Alternate criteria may apply to specific platforms based on platform-specific ocean conditions.

1.3 REGULATORY SETTING

The primary federal regulations that apply to this project are the Clean Water Act (CWA), Endangered Species Act (ESA), Marine Mammal Protection Act (MMPA), Migratory Bird Conservation Act (MBCA), and Magnuson-Stevens Act.

The permit for the discharges from the offshore facilities will be issued under Section 402 of the Clean Water Act. The discharges must also be in compliance with sections 301, 302, 306, 307, 308, 318, and 405 of the Act.

The Endangered Species Act requires formal consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service whenever federal actions have the potential to adversely affect threatened or endangered species, or species proposed for such listing. The U.S. Fish and Wildlife Service (USFWS) has jurisdiction over all birds, terrestrial and freshwater fish, wildlife, and plants, as well as the sea otter. The National Marine Fisheries Service has jurisdiction over marine mammals (except the sea otter), anadromous fishes, and marine fisheries resource.

The Marine Mammal Protection Act prohibits the taking (e.g., harassment, disturbance, capture, and death) of marine mammals except as set forth in the Act.

The Migratory Bird Conservation Act protects migratory birds, including all seabirds, from unauthorized take.

The Magnuson-Stevens Act regulates fishing in U.S. waters. The 1996 amendments require an essential fish habitat (EFH) impact assessment for federal actions that may adversely affect EFH.

2.0 SPECIES OF CONCERN

A number of federally-listed threatened or endangered species are known to be present, at least periodically, in the area where the OCS oil and gas facilities are located. This biological assessment focuses on species that could potentially be affected by the project. The other species will be covered in enough detail to substantiate the assessment of no impact. The following sections describe the general marine biological resources present in the project area and the federally-listed species covered by this biological assessment.

2.1 OVERVIEW OF BIOLOGICAL RESOURCES WITHIN PROJECT AREA

Point Conception is considered a boundary between biotic provinces (Hedgpeth 1957; Dawson 1961; Hall 1964), although a transition zone exists at this boundary (Newman 1979), with warmer water species and communities to the south and colder water ones to the north. The Southern California Bight is within the southern biotic province and extends from Point Conception in the north to Cabo Colnett, Baja California, Mexico on the south and west to the California Current (SCCWRP 1973). Most (18) of the 22 platforms are located in the Southern California Bight with the remaining four located just north of Point Conception.

Marine habitats present in the project area include open ocean/water column (both shallow and deep), soft bottom, hard bottom (rocky reefs), water surface, kelp beds (generally associated with hard bottom in shallow water), and intertidal (both sandy beach and rocky shore). The platforms are all in open water with their legs into soft bottom. Shallow water and intertidal habitats are located approximately 3 or more miles away along the shoreline.

Soft bottom habitats support infauna (living within the sediments) and epifauna (living on the surface of the sediments). On the continental shelf, polychaete worms are the dominant infaunal species followed by crustaceans such as amphipods. Echinoderms, such as brittle stars, and molluscs are also common (Jones 1969). The density of these organisms ranges from about 2,500 per square meter (m^2) to over 5,000 per m^2. Four major benthic communities are present on the mainland shelf in the Santa Barbara Channel (Jones 1969). Common species include the tube-building worm (*Diopatra ornata*), a brittle star (*Amphiodia urtica*), and a bivalve mollusc (*Cardita* sp.). Common epifauna on the shelf and slope include sea urchins, prawns and shrimp, sea cucumbers, and starfish (Word and Mearns 1979; Mearns and Sherwood 1979).

Rocky substrates in shallow nearshore waters (less than 100 feet) are highly productive and often support kelp beds. The rock surfaces are generally completely encrusted with invertebrates and algae. Fish and mobile invertebrates such as lobster and crabs are also abundant. In deeper waters above the OCS, attached and mobile invertebrates are commonly found on hard substrates, but light levels are too low to support algae.

The legs of platforms provide hard substrate for attachment of many organisms. Surveys of Hondo A showed mussels (*Mytilus* sp.) and goose-neck barnacles (*Pollicipes polymerus*), green anemones (*Anthopleura elegantissima*), and ochre sea stars (*Pisaster ochraceus*) to be abundant near the water surface (Exxon 1982). Above that is a zone of barnacles and filamentous green algae. Below about 10 feet, red anemones (*Corynactis californica*) and plume anemones (*Metridium senile*) are common. Rock scallops (*Hinnites multirugosus*) are common to depths of about 66 feet and provide substrate

for barnacles and anemones. A few crabs are present in crevices, and starfish abundance decreases with depth. A mound of mussel and barnacles that have fallen from the platform is present at the bottom of the platform. Remote photographs of this shell pile indicate that spot prawns (*Pandalus platyceros*) and rock crab (*Cancer* sp.) are abundant, probably due to the increased food source.

The water column supports planktonic plants and animals as well as a variety of fish, marine mammals, and occasionally sea turtles. Seabirds use the water surface for resting, and most forage on the organisms in the surface layer. Phytoplankton form the base of the marine food web and include blue-green algae, diatoms, dinoflagellates, silicoflagellates, and cocolithiphores (BLM 1979). Zooplankton include species that spend their entire life cycle in the water column as well as the egg, larval, or juvenile stages of species whose adult stage is not planktonic. The abundance and species composition of plankton vary considerably over space and time in the ocean in response to physical, chemical, and biological factors.

Nearly 500 species of fish are found in the coastal marine waters of southern California (Miller and Lea 1972). Some species are found primarily in shallow waters near shore, associated with the bottom (benthic) at various depths, or in the water column. The diversity of habitats in shallow, nearshore waters (e.g., rocky reefs, kelp beds, and sandy bottom) and the high productivity generally result in a greater abundance fish and diversity of species near shore. Schooling open water species such as anchovies can also be very abundant in limited areas.

Offshore platforms attract a variety of species and age classes of fish, and may provide nursery grounds for some species (Love 1997). Studies at seven platforms in the Santa Barbara Channel and north to Platform Irene have found that rockfish (*Sebastes* spp.) make up 90 to 95 percent of the fish (Love 1997). These fish form three communities: mid-water, bottom (on mussel beds), and lower platform. The mid-water community is primarily the young of the year and one- to two-year-old fish with widow rockfish (*Sebastes entomelas*) being the most common. The bottom community on the mussel shells is predominantly small fish (either young fish or species that are small as adults). The lower platform community fish are generally under the lowest cross beams within 5 feet of the structure. Some species, such as painted greenling (*Oxylebius pictus*) and bocaccio (*Sebastes paucispinis*), have smaller individuals in mid-water and larger individuals at the bottom. Platform depth influences the number of species at the bottom but not at mid-water. The species present is also related to geographical location of the platform.

Open waters along the coast of southern California are used by a variety of marine mammals and seabirds. The California sea lion (*Zalophus californianus*) is the most common pinniped in the project area, and harbor seals (*Phoca vitulina*) are present as well. Northern elephant seals (*Mirounga augustirostris*) are common in the Santa Barbara Channel. The Channel Islands, particularly San Miguel, are important rookeries for five species of pinnipeds. Eleven species of whales and 17 species of dolphins and porpoises are known from the Southern California Bight. Whale species not listed in Table 2 include Hubb's beaked whale (*Mesoplodon carlhubbsi*), beaked whale (*Mesoplodon ginkodens*), and Cuvier's beaked whale (*Ziphius cavirostris*). Of the dolphins and porpoises, the most common are common dolphin (*Delphinus delphis*), Pacific white-sided dolphin (*Lagenorhynchus obliquidens*), Pacific bottlenose dolphin (*Tursiops gilli*), Dall porpoise (*Phocoenoides dalli*), and pilot whale (*Globicephala macrorhynchus*). Less common species are Risso's dolphin (*Grampus griseus*), northern right whale dolphin (*Lissodelphis borealis*), and killer

whale (*Orcinus orca*). Sea otters (*Enhydra lutris nereis*) are present in the northern end of the project area (Dohl et al. 1980; Bonnell et al. 1980; UC Santa Cruz 1980; Dames & Moore 1982; BLM 1981).

Many species of seabirds use coastal habitats (mainland and islands) and the open ocean, and a number of species breed on the Channel Islands (Webster et al. 1980; Bonnell et al. 1980). Common species that forage in offshore waters include California brown pelican (*Pelecanus occidentalis californicus*), Brandt's cormorant (*Phalacrocorax penicillatus*), double-crested cormorant (*Phalacrocorax auritus*), western grebe (*Aechmorphus occidentalis*), western gull (*Larus occidentalis*), Heermann's gull (*Larus heermanni*), and Bonaparte's gull (*Larus philadelphia*). Species commonly found foraging on sandy beaches, particularly during winter, include marbled godwit (*Limosa fedoa*), sanderling (*Calidris alba*), black-bellied plover (*Squatarola squatarola*), and whimbrel (*Numenius phaeopus*). The California least tern (*Sterna antillarum browni*) and western snowy plover (*Charadrius alexandrinus nivosus*) both breed on sandy beaches. Gulls and pelicans also rest on beaches. Shallow nearshore waters are used by several species of terns for foraging.

2.2 SPECIES DESCRIPTIONS

Federally-listed species present in the project area are presented in Table 2. The likelihood that these species could be affected by permitted discharges from the OCS oil and gas facilities is also shown in the table. This likelihood was determined based on the number of individuals present in the project area relative to the regional population size, the amount of time per year that the species could be present in the project area, and the primary food sources for the species. The unlikely category represents species with few individuals present, generally for only part of the year, that forage primarily away from the OCS oil and gas facilities. The descriptions for those species unlikely to be affected by the project discharges are less detailed that for those species that could be affected. The gray whale has been removed from the endangered species list and is not covered further in this document.

2.2.1 Sea Turtles

Green Sea Turtle

The green sea turtle was federally listed in 1978; the breeding populations off the coast of Florida and the Pacific coast of Mexico were listed as endangered while all other populations were listed as threatened (Turtle Trax 1999; NMFS no date). They are considered the largest hard-shelled sea turtle and can reach up to 400 pounds. Average size for adult females is approximately 250 pounds. Sexual maturity in green sea turtles is reached at 20 to 50 years of age. Green sea turtles lay their eggs on beaches, and hatchlings head into the open ocean where they feed on jellyfish and other invertebrates until they reach about 14 inches in length. Adult sea turtles are herbivores, feeding on seagrass and algae.

Table 2. Listed Species in the Project Area.

Species (Scientific Name)	*Status* [1]	*Affected by Project*	*Comments*
Green sea turtle (*Chelonia mydas*)	FT/FE	Unlikely	Occasionally observed along Southern California coastline.
Loggerhead sea turtle (*Caretta caretta*)	FT	Unlikely	Infrequently observed along Southern California coastline.
Olive Ridley sea turtle (*Lepidochelys olivacea*)	FT/FE	Unlikely	Infrequently observed along Southern California coastline.
Leatherback sea turtle (*Dermochelys coriacea*)	FE	Unlikely	Infrequently observed along southern California coastline.
Guadalupe fur seal (*Arctocephalus townsendi*)	FT, ST	Unlikely	Most of population is in Mexican waters with several records for San Miguel and San Nicolas islands.
Steller (northern) sea lion (*Eumetopias jubatus*)	FT	Unlikely	Ranges from Alaska to Santa Barbara Channel Islands; small numbers breed on San Miguel Island.
Gray whale (*Eschrichtius robustus*)	Delisted	Maybe	1,000s migrate close to shore (within 3 km) south in December and January, north February and March.
Sei whale (*Balaenoptera borealis*)	FE	Unlikely	Only occasionally observed off the California coastline.
Blue whale (*Balaenoptera musculus*)	FE	Maybe	Estimated 2,000 blue whales occur off California during fall.
Finback whale (*Balaenoptera physalus*)	FE	Maybe	Only occasionally observed off the California coast line.
Humpback whale (*Megaptera novaeangliae*)	FE	Maybe	Frequent observations in fall off coastline.
Right whale (*Balaena glacialis*)	FE	Unlikely	Scarce, but some records in winter.
Sperm whale (*Physeter catodon*)	FE	Unlikely	Associated with deep water, most often more than 30 km from shore.
Steelhead trout (*Oncorhynchus mykiss*)	FT, FE [2]	Maybe	Maturing juveniles and adults spend several years feeding at sea. Listed status only applies to the species while in streams and estuaries.
Chinook salmon (Sacramento River winter run) (*Oncorhynchus tshawytscha*)	FE	Unlikely	Maturing juveniles and adults spend several years feeding at sea. Listed status only applies to the species while in streams and estuaries.

1. E = endangered; T = threatened; F = federal; S = State
2. Endangered from Santa Maria River south; threatened to the north

Green sea turtles are found in both the Atlantic and Pacific oceans. They occur throughout the North Pacific, including the Hawaiian Islands. Along the west coast of North America, they range from Baja California to Alaska (NMFS no date).

Loggerhead Sea Turtle

The loggerhead sea turtle was federally listed as threatened on 2 June 1970 (NMFS no date). The average weight is 250 pounds, and sexual maturity is reached as 16 to 40 years of age. Mating takes place from late March to early June, and the eggs are laid on sandy beaches throughout the summer.

Loggerhead turtles occur around the world in temperate, subtropical, and tropical waters primarily on the continental shelf and in bays, estuaries, and lagoons. Along the eastern Pacific, they range from Chile to Alaska. Juveniles have been recorded off the coast of California. The only known breeding area in the North Pacific is in southern Japan.

Olive Ridley Sea Turtle

The olive ridley turtle was federally-listed on 28 July 1978: endangered for the Mexican nesting population and threatened for all other populations (NMFS no date). This species is a small, hard-shelled marine turtle. Olive ridleys form large nesting aggregations called *arribadas*. Nesting in the eastern Pacific occurs from Sonora, Mexico south to Colombia. They feed on crabs, shrimp, rock lobsters, jellyfish, tunicates, and algae.

Olive ridley turtles inhabit the tropics of the Pacific Ocean. They are common off Colombia and Ecuador with few off Peru and Chile. A few non-nesting individuals occasionally occur off the southwestern United States. Their abundance in other parts of the Pacific is low.

Leatherback Sea Turtle

The leatherback turtle was federally-listed as endangered throughout its range on 2 June 1970 (NMFS no date). The current population estimate is 20,000 to 30,000 female leatherback turtles worldwide. The leatherback sea turtle is the largest living turtle with weights ranging from 440 to 1,540 pounds. Its carapace is tough, oil-saturated connective tissue. They lay eggs on sandy beaches in February to July in the Atlantic Ocean, Caribbean Sea, and Pacific Ocean.

In the Pacific, leatherback sea turtles are commonly seen near Hawaii in waters more than 600 feet deep but within sight of land.

2.2.2 Guadalupe Fur Seal

The Guadalupe fur seal was federally listed as threatened throughout its range on 16 December 1985 (NMFS no date). The primary cause of their decline was commercial hunting in the late 1700s and early 1800s. None were present in southern California waters by 1825. The population has recovered to about 7,000 animals (Seal Conservation Society 1999a). This species breeds at rocky sites or caves on Isla de Guadalupe about 125 miles west of Baja California and Isla Benitos del Este

(NMFS no date; Seal Conservation Society 1999a). Pups are born from mid-June through July with most occurring in June. Mothers nurse their pups for 5 to 6 days at 9 to 13-day intervals for 8 to 9 months (Seal Conservation Society 1999a). Two males established territories on San Nicolas Island off California in recent years. Individuals have also been sighted at San Clemente Island and San Miguel Island (NMFS no date). Guadalupe fur seals do not migrate. They feed on squid and fish up

to 1,270 miles from the breeding grounds (Seal Conservation Society 1999a).

2.2.3 Steller's Sea Lion

Species Description

Steller's sea lions were federally listed as threatened in 1990. West of 144°W (Cape Suckling, Alaska), the species was reclassified as endangered in 1997 while east of 144°W, the species remains listed as threatened (Seal Conservation Society 1999b).

Steller's sea lions occur in the North Pacific Ocean from California to northern Japan. Recent census data indicate that the population has declined from 290,000 in 1985 to 96,000 with about 70 percent in the United States. The decline may be related to depletion of their food by commercial fishing (Seal Conservation Society 1999b). Breeding occurs throughout most of their range and extends to the Channel Islands off California. Most of the breeding off California occurs on Año Nuevo Island and the Farallon Islands. Pups are born from mid-May to early June (Daugherty 1979), and the mothers usually nurse them for a year or sometimes longer (Seal Conservation Society 1999b). No pups were observed on San Miguel Island or near Point Buchon in 1980 to 1982 (Bonnell et al. 1983).

Adult males average 9 feet in length and 1,250 pounds while females average 7.5 feet in length and 580 pounds. Sexual maturity is reached at 3 to 8 years of age for females and 3 to 7 years for males, although territorial males are between 9 and 13 years of age. Their life span is up to 30 years for females and 20 years for males. They can dive to a depth of over 1,300 feet. They forage near shore and over the continental shelf on a variety of fish species as well as squid and octopus. Some individuals, particularly adult males and juveniles, disperse widely outside the breeding season (Seal Conservation Society 1999b).

Status in Project Area

A few Steller's sea lions have bred on San Miguel Island in the past, and a few individuals have been sighted in the Santa Barbara Channel and at Point Sal Rock (Bonnell et al. 1983).

2.2.4 Sei Whale

Species Description

The sei whale was federally-listed as endangered on 2 June 1970.

The sei whale is distinguished by its dark gray body with common grayish white scars and a prominent dorsal fin almost one-third of the body length forward from the fluke notch (Leatherwood and Reeves 1983). The body is thin and streamlined, and the flippers are relatively small and pointed. There are 32 to 60 ventral grooves that end before the naval region of the generally white underside (Leatherwood and Reeves 1983). The body can be 56 feet long (male) and 61 feet long (female) in the Northern Hemisphere, and both males and females become sexually mature at six to twelve years of age. The sei whale diet is extremely varied and includes copepods in the northern section of the range and krill, squid, and small schooling fish in the southern portions (Leatherwood and Reeves

1983). They primarily feed by swimming with their mouth open and taking in food and water, allowing the food to get trapped in their baleen.

Although sei whales are distributed rather sparsely around the world, in the Eastern Pacific they are found from central California north to the Gulf of Alaska in the summer and as far south as the Revillagigedo Islands off Mexico in the winter months. They commonly travel in groups of two to five individuals, although there are reports of larger concentrations in feeding grounds. Similar to other baleen whales, sei whales annually migrate between lower-latitude wintering grounds and higher-latitude feeding grounds (Leatherwood and Reeves 1983). In winter months, the distribution of sei whales includes waters from the California/Baja California boundary north to the Gulf of Alaska, with larger concentrations known to gather outside the Channel Islands (Leatherwood et al. 1987).

Status in Project Area

A year-round presence, though very small, is thought to be present near the Southern California Bight and in waters of the Channel Island National Marine Sanctuary (Leatherwood et al. 1987). Sightings are extremely rare, and the sei whales are though to skirt the edge of the continental shelf. Only two confirmed sightings of sei whales totaling five individuals are reported for the Southern California Bight, and both were in deep water southwest of San Clemente Island. Also, due to similarities to finback whales, blue whales, and the Bryde's whale, the true number of and confidence in some past sightings of sei whales is ambiguous.

The occurrence of sei whales in waters close to OCS oil and gas facilities would appear to be extremely rare and very unlikely.

2.2.5 Right Whale

Species Description

The northern right whale was federally-listed as endangered on 2 June 1970. In fact, the northern right whale is considered to be the most endangered cetacean in the world (Leatherwood et al. 1987).

The northern right whale is characterized by a curved mouth opening and very large head, which may comprise 30 percent of its body length (Orr 1972). This whale has no ventral grooves and no dorsal fin (Daugherty 1979). Right whales may reach a length of 56 feet (Leatherwood and Reeves 1983). The body is generally black to brown in color, though it may have irregular patches of white on the throat and belly. Growths called callosities, which may be white, orange, or yellowish in color, are present on the chin, sides of the head, lower lips, above the eyes, and near the blowholes. The baleen, which may be up to 9 feet in length, is dark gray to black although the most anterior portions may be white. This series of 220 to 260 baleen plates is used to filter food from the water. Right whales are specialized feeders that feed on copepods when available and euphausiids as a second choice.

Northern right whales historically ranged from the Bering Sea and Alaska to Baja California (Daugherty 1979). It is thought that northern right whales spend the summer months in the northern waters of the Bering Sea and near Alaska migrating south during the winter to the northern coast of Japan in the western Pacific and to Baja California in the eastern Pacific (Orr 1972). The northern

right whale was once abundant along all major land masses (Leatherwood and Reeves 1983). These whales were heavily hunted and nearly became extinct, partially due to the fact that this whale is slow, produces a high yield of oil, and does not sink when killed (Orr 1972). Once seen in groups of up to 100 individuals, it is now more common to see groups of only 2 to 12 individuals (Leatherwood and Reeves 1983). It is estimated that the population of right whales in the north Pacific is only 80 to 200 individuals (Leatherwood et al. 1987). Since the 1950s, only a few sightings of northern right whales have been made off the coast of Washington, Oregon, southern California, and northwest Baja California (Leatherwood and Reeves 1983).

Status in Project Area

Very few observations of northern right whales have been made off southern California in the last century (Daugherty 1979; Leatherwood et al. 1987). In the eastern north Pacific, south of 55 degrees north latitude, there have only been a few records of northern right whales within the last century which are listed as follows: one killed near the Farrallon Islands, one stranded near Santa Cruz Island in 1912, and 35 sightings comprising 71 individuals (Leatherwood et al. 1987). Of these 35 sightings, two occurred in the Southern California Bight. Both accounts were of solitary whales migrating south, one off La Jolla in March 1955 and the other in the eastern Santa Barbara Channel in April 1981.

The occurrence of northern right whales passing through waters close to OCS oil and gas facilities would appear to be an extremely rare event. The most likely time for a northern right whale to be in this area would be during the winter or early spring when northern right whales would be migrating between summer and winter locals. In the rare chance that a northern right whale would be in waters close to OCS oil and gas facilities, it would likely be passing through and would not be in the vicinity of OCS oil and gas facilities for any long period of time.

2.2.6 Sperm Whale

Species Description

The sperm whale was federally listed as endangered on 2 June 1970.

A box-shaped body and large head comprising up to 40 percent of the body characterize the sperm whale (Leatherwood and Reeves 1983). Historically, male sperm whales commonly reached lengths of 60 feet, although they now average about 50 feet in length with females averaging 36 feet in length. Sexual maturity occurs at 8 to 11 years of age for females and at 10 or more years for males. The sperm whale has a single blowhole on the left front of the head. A distinct dorsal hump that is rounded or triangular at its peak is located about two-thirds of the way down the back. Behind the hump is a series of cremulations or ridges along the midline. The fluke of the sperm whale is broad and triangular with a straight rear margin. Sperm whales are usually dark brownish gray in color, while the belly and front of the head may be grayish to off-white. Sperm whales have a narrow underlying jaw with 18 to 25 functional teeth. These teeth are thick and conical and fit into sockets in the usually toothless upper jaw. Sperm whales make deep dives, with depths of 6,500 and 9,200 feet recorded by submarines, that last for an hour or more. Sperm whales feed mainly on squid, but have been known to eat octopus and a variety of fish including salmon, rockfish, lingcod, and skates.

The sperm whale is found worldwide in pelagic waters (Leatherwood et al. 1987). Generally, most sperm whales are found in waters between 40 degrees north and 40 degrees south latitude, but adult males may wander above 40 degrees latitude in either hemisphere. Sperm whales tend to be found in deep waters along the continental shelf edge, on the continental slope, or over deep offshore canyons. They may occasionally wander into shallower water over the continental shelf in areas where deep water canyons intrude into the continental shelf. Sperm whales may be found individually or in groups of 50 or more individuals (Leatherwood and Reeves 1983). Sperm whale abundance was estimated at more than 2,000,000 whales in the mid-1940s. Sperm whales were hunted heavily by Japanese and Soviet fleets and are now estimated to have a population of 1,500,000 (Leatherwood et al. 1987).

Status in Project Area

Sperm whales occur in the Channel Island National Marine Sanctuary (CINMS), primarily seaward of the continental shelf edge (Leatherwood et al. 1987). Since 1965, there have been 11 verified accounts of sperm whales within the waters of the continental shelf in the northern part of the Southern California Bight. Of these accounts, 7 were adjacent to CINMS. The most recent observation was inshore of east Anacapa Island in October 1985. Although it is possible that sperm whales may pass through waters near OCS oil and gas facilities, their occurrence near those facilities would generally appear to be very infrequent and transitory.

2.2.7 Blue Whale

Species Description

The blue whale was federally-listed as endangered on 2 June 1970, and therefore the north pacific stock is considered "depleted" and "strategic" under the Marine Mammal Protection Act (NOAA 1997a). The blue whale received international protection in 1966 (Mate and Lagerquist 1999).

The blue whale is the largest of all whales and may reach lengths of 100 feet and weigh 100 tons (Daugherty 1979). The body of the blue whale is characterized by a broad flat rostrum, long thin flippers, and a small dorsal fin that is located very far back on the body and is usually below the surface of the water (Leatherwood and Reeves 1983). The body is generally light bluish-gray in color and is often mottled with gray or grayish-white patches. The blue whale has 55 to 68 ventral grooves that may expand while feeding and has 260 to 400 relatively short, stiff, and coarsely fringed baleen plates to filter food from the water. Blue whales tend to be shallow feeders as their prey are generally found in the top 330 feet of the water column. The diet of the blue whale consists primarily of krill and pelagic red crabs (Leatherwood et al. 1987).

The blue whale is usually found alone or in pairs, although several individuals or pairs may be seen within a few miles of each other when in rich feeding grounds (Leatherwood and Reeves 1983). Blue whales are generally thought to migrate long distances with predictable seasonal patterns between high latitude summer grounds and low latitude winter grounds. However, there may be some geographically separate stocks that do not necessarily adhere to these general migratory patterns (Leatherwood et al. 1987). Blue whales become sexually mature at 10 years of age (Leatherwood and Reeves 1983). The average gestation period is 11 to 12 months with newborn calves being weaned at about 8 months of age (Daugherty 1979).

Blue whales occur in all the major oceans of the world and although generally found near the continental shelf, blue whales are also seen in deep oceanic zones and in shallow inshore areas (Leatherwood and Reeves 1983). There are thought to be three major stocks of blue whales: north Pacific, north Atlantic, and southern hemisphere stocks. The north Pacific stock is generally thought to summer in waters from central California to the Gulf of Alaska with some whales located as far south as 33 degrees north latitude near the Channel Islands. In typical winter patterns, blue whales are found in waters from the mid-temperate Pacific south to at least 20 degrees north latitude. Blue whales are seen with some regularity off the deep coastal canyons of central and southern California. Observations of blue whales off southern California most commonly occur from June to December and peak from July to October (Leatherwood et al. 1987). Many of these animals are seen migrating north outside of the Channel Islands.

Historically, over 5,000 blue whales were estimated to be present in the north Pacific before whaling greatly reduced these numbers (Leatherwood and Reeves 1983). It has been estimated that as many as 2,250 blue whales may now be present off of the California coast during the summer months (Barlow 1995), which is higher than other estimates that place the north Pacific stock at 1,200 to 1,700 individuals (Leatherwood and Reeves 1983). There is some evidence that blue whale populations have increased since attaining protected status, but it is not known to what extent this may be true (Barlow 1994a).

Status in Project Area

Over the last 20 years blue whales have occasionally been sighted in the Southern California Bight (Leatherwood et al. 1987). Blue whales have been sighted near Santa Catalina Island, Santa Barbara Island, San Nicolas Island, San Miguel Island, and within 5 nautical miles of the mainland coast in the northern Santa Barbara Channel between September and November. During the summer and fall, blue whales, thought to be the same individuals, were seen near San Miguel Island for a month or more. During November of 1985, four different groups of blue whales were observed in the Santa Barbara Channel between Ventura and Anacapa Island. Blue whales have be observed traveling through and feeding on high krill concentrations in the western end of the Santa Barbara Channel off San Miguel Island and Santa Rosa Island (Feidler et al. 1998; Mate et al. 1999). This information may indicate that some blue whales, in a given year, may spend the entire time south of Point Conception. Blue whales found in the Santa Barbara Channel may be passing through while migrating north or south while some may linger in the area for some time possibly feeding.

The likelihood of blue whales passing through waters close to OCS oil and gas facilities would be highest during the summer and fall from June to December, when higher numbers of blue whales are observed in southern California waters. In consideration of the location of blue whale sightings and the possibility of whales straying from feeding areas and more normal migratory routes, it would seem that blue whales would have the potential to occasionally pass through waters closer to shore and possibly in the vicinity of the OCS oil and gas facilities. Generally, it would appear that blue whale aggregations occur in waters associated with their food source in the western part of the Santa Barbara Channel near San Miguel Island and Santa Rosa Island and usually would not be lingering in waters close to OCS oil and gas facilities.

2.2.8 Finback Whale

Species Description

The finback whale (fin whale) was federally listed as endangered in June 1970, and the California, Oregon, and Washington stock is considered "depleted" and "strategic" under the Marine Mammal Protection Act (NOAA 1997b). The finback whale achieved protected status under the International Whaling Commission in 1976.

The finback whale is second in size only to the blue whale (Ward 1999). Adult finback whales grow to a length of 24 to 26 m with females slightly larger than the males (Stepanek et al. 1999). The finback whale is characterized by the asymmetric coloration of their head. The top and left side of the head are dark gray while the right lower lip plate and 20 to 30 percent of the right front baleen plates are white or yellow and the rest are gray. The dorsal fin is 60 cm tall and is located about two-thirds of the way down the body, with the posterior third of the body having several dorsal ridges. The finback whale is one of the fastest swimming baleen whales and can travel at speeds of up to 32 km/hr for short times. The finback whale may dive to depths deeper than 230 m with an average dive lasting 5 to 15 minutes. The finback whale uses 520 to 950 baleen plates hanging from the upper jaw to filter food, such as squid, krill, capelin, herring, and lanternfish (Ward 1999).

The finback whale is more gregarious than other baleen whales and usually travels in pods of 6 to 10 animals, although groups of over 100 have been observed congregated in summer feeding areas (Ward 1999). Finback whales may communicate through moans, pulses, clicks, grunts, or breaching (Stepanek 1999). Breeding and calving is generally thought to take place in southern wintering grounds (Leatherwood 1987). Females may mate at 2 year intervals with a gestation period of about one year and nurse their young for 6 to 7 months (Poss 1999). Finback whales live approximately 60 years (Ward 1999).

Fin whales can be found in all the major oceans of the world (Poss 1999). Three stocks of finback whales are recognized in the North Pacific: the California/Oregon/Washington stock, the Hawaii stock, and the Alaska stock (NOAA 1997b). Generally, it is thought that finback whales migrate to polar waters in summer for feeding and return to warmer seas in winter for calving and breeding (Ward 1999). Whaling records and current observations of finback whales off the California coast from May through September suggest that not all whales migrate to northern waters and that some finback whales may be found year-round in southern waters (Leatherwood et al. 1987; Barlow 1995).

Historically, it is estimated that between 42,000 and 45,000 finback whales inhabited the North Pacific (Ohsumi et al. 1974). In 1973 the population of finback whales in the North Pacific was estimated to be between 13,620 to 18,680. There has been some evidence that finback whale populations have increased since attaining protected status, but it is not known to what extent this may be true (Barlow 1994). Finback whale abundance in the summer off the California Coast has been estimated at 933 individuals from ship surveys taken in 1991 and 1993 (Barlow 1996). Though whales are now protected from whaling, incidental take may still occur through ship strikes and entanglement in fishing gear (NOAA 1997b).

Finback whales have been documented off of Baja California and in the Southern California Bight during all seasons, but there was an increase in sightings from June through September (Leatherwood et al. 1987). Finback whales have been documented near the Santa Rosa-Cortez Ridge, the Tanner-Cortes Ridge, and San Nicolas and San Clemente islands. During the winter, finback whales

appear to reside in waters further offshore as most whales are observed outside the Channel Islands. During the summer, finback whales have been observed in waters northwest of Santa Cruz Island and in the Santa Barbara Channel east of Yellow Bluffs, near San Nicolas Island, and in waters along the southwest sides of Santa Cruz and Santa Rosa islands.

Status in Project Area

The likelihood of finback whales passing through waters close to OCS oil and gas facilities would be highest during the summer months (June- September) when higher congregations are observed around the northern Channel Islands (Santa Rosa and Santa Cruz islands). Finback whales within the Santa Barbara Channel seem to be most commonly observed near the Channel Islands. Generally, it appears that finback whales do not congregate in waters close to OCS oil and gas facilities and that occurrence of finback whales in these waters would be short lived.

2.2.9 Humpback Whale

Species Description

The humpback whale was federally listed as endangered on 2 June 1970. It has also been protected worldwide by the International Whaling Commission since 1966 (American Cetacean Society 1996). They are considered "depleted" and "strategic" under the MMPA.

Humpback whales are black on their back (dorsal) side with mottled black and white on the under (ventral) side (American Cetacean Society 1996). The body is round with a broad (wide) but slim (top to bottom) head. The top of the head and lower jaw have round, bump-like knobs as do the leading edges of the flippers. The dorsal fin is irregularly shaped and, along with the tale fluke, is used to identify individual whales. Adult males reach 48 feet in length and females reach 50 feet. Sexual maturity is reached at six to eight years of age, and females produce one calf every two to three years. Humpback whales feed on krill, small shrimp-like crustaceans, and a variety of small fish. Food is strained from the water using 270 to 400 baleen plates that hang from each side of the upper jaw.

Humpback whales are found in oceans throughout the world with multiple populations in the north Pacific. They migrate extensively between northern wintering areas used for feeding and southern summering areas used for mating and calving (Leatherwood and Reeves 1983; American Cetacean Society 1996). Most are found over shallow banks and over the continental shelf. They occur individually or in groups of two to three most of the time, but can congregate in groups of 12 to 15 (Leatherwood and Reeves 1983). The population in the eastern Pacific apparently ranges from Mexico to the U.S.-Canadian border with some moving between Mexico and Hawaii (Calambokidis et al. 1996). The number of humpback whales in this population is estimated to be 597 (NOAA 1997c), and the total population in the north Pacific is estimated to exceed 3,000 (Barlow 1994b). Approximately 15,000 to 20,000 humpback whales are believed to be present worldwide (American Cetacean Society 1996).

Humpback whales have several interesting behavioral traits. They breach (leap completely out of the water), swim on their backs with both flippers out of the water, and slapping the water surface

with their tail fluke or flippers (American Cetacean Society 1996). The males also sing complex "songs" that differ between populations, such as in the north Pacific and north Atlantic. The songs may be a part of mating behavior.

Status in Project Area

Humpback whales can be found near the mainland coast and islands of the Southern California Bight at all times of the year (Leatherwood et al. 1987). Groups have been observed from San Miguel Island, primarily north bound, from June through September. Aerial surveys from 1968-1978 and 1975-1978 recorded 33 sightings of humpback whales in the Bight, and concentrations of this species have been observed near the largest northern islands after 1978.

2.2.10 Steelhead Trout

Species Description

Steelhead trout populations between the Russian River on the north and the Santa Maria River on the south were federally listed as threatened on August 11, 1997, while populations south of the Santa Maria River were listed as endangered (NMFS 1997). The species is a state-designated Species of Special Concern (Moyle et al. 1995). The listing currently does not include the species while in the ocean.

Steelhead trout are steel-blue to brown above and pale below with small, irregular black spots on the back and most fins and radiating rows of black spots on the caudal fin. Along the Pacific Coast, steelhead and rainbow trout represent two alternative life history strategies of a single species. Steelhead are anadromous, migrating from the ocean up rivers and streams to spawning grounds. Adult steelhead enter creeks in the winter, usually after the first substantial rainfall (Moore 1980), and move upstream to suitable spawning areas. Following a variable period of egg and juvenile development (average of 2 years), the young return to the sea, usually from March through July, where further growth and development occur for 2 to 3 years prior to the fishes' return to freshwater, usually to their native stream, for spawning. Unlike salmon, steelhead can spawn more than once, although few spawn more than twice (NMFS 1997).

Status in Project Area

In the project area, steelhead trout migrate into coastal streams from Malibu Creek on the south to the Santa Ynez River during the winter rains. The juveniles enter the ocean from their natal streams in the spring to summer, depending on the amount of water flow in the stream. Their abundance and location while feeding in the ocean, however, is unknown.

2.2.11 Chinook Salmon

Species Description

Winter-run chinook salmon in the Sacramento River were federally listed as threatened on 4 August 1989 through an emergency interim rule and were formally listed on 5 November 1990. The listing was reclassified to endangered on 4 January 1994, and critical habitat was designated on 15 June

1993 (NMFS 1994).

Four groups of Central Valley chinook salmon are present in the Sacramento and San Joaquin rivers and their tributaries based on run timing: spring-run, fall-run, late-fall-run, and winter-run (Meyers et al. 1998). The winter-run fish historically used the upper watersheds of the Sacramento, Pit, McCloud, and Calaveras rivers for spawning, and the runs were smaller than for the three other groups. Habitat degradation due to dams, water diversions, placer mining, and other land use practices (past and present) have greatly reduced the extent and size of winter-run chinook runs. The number of returning adults has declined from an average of 86,500 in 1967-69 to 830 in 1994-96. Due to the presence of dams, the winter-run chinook salmon population now only spawns below Keswick Dam. Freshwater harvest of this species is negligible, but ocean harvest is moderately high.

Central Valley chinook salmon have an ocean-type life history where the young migrate to the ocean at less than one year of age (Meyers et al. 1998). Adults enter freshwater during high flows in late November through January at approximately three years of age. They remain in pools upriver until they spawn in April-July. The young emigrate in the fall at less than one year of age and spend about two months in the estuary before going to the ocean. Ocean-type salmon tend to migrate along the coast (rather than out into the central Pacific), and populations using streams south of Cape Blanco usually migrate to the south.

Status in Project Area

Winter-run chinook salmon potentially could use portions of the project area during the ocean phase of their life cycle. The number of individuals and locations used are unknown.

3.0 POTENTIAL EFFECTS ON SPECIES AND HABITAT

Discharges from the OCS oil and gas facilities could potentially affect listed species through direct toxicity (acute or sublethal) through exposure in the water, ingestion of prey that have bioaccumulated toxins from the discharges, or reduction in prey caused by direct or indirect (bioaccumulation) mortality from the toxic pollutants in the discharges or by habitat alteration caused by discharges of muds and cuttings. Direct toxicity to listed species or their food base should be minimal since the discharges are required to meet water quality criteria, established to protect biological resources, outside the mixing zone. The primary mode of potential impact to listed species would be through bioaccumulation of toxins in their prey. The main chemicals of concern are those listed in Table 1.

There is some evidence that planktonic and benthic organisms may bioaccumulate heavy metals from drilling muds (Sweeney 1980; Mariani et al. 1980; Crippen et al. 1980) and that biomagnification through the food web does not occur for metals but may for organic substances (Schafer et al. 1982). Many animals have the capability to detoxify metals and organic compounds that enter their bodies (Jenkins et al. 1982; Brown et al. 1982). This is accomplished at the subcellular level where a protein (metallothionien) sequesters the metals and prevents them from reaching sites where toxic reactions could occur. Detoxification of the metals, however, is likely to have metabolic costs to the organisms and use energy normally needed for other activities (SAI 1984). Petroleum hydrocarbons accumulated by organisms are released at varying rates that depend in part on the ability of the

organisms to metabolize these substances. Arthropods can generally metabolize petroleum hydrocarbons while molluscs cannot, and polychaetes apparently metabolize naphthalene but not methylnaphthalene (Neff and Anderson 1981). Thus, molluscs tend to accumulate petroleum hydrocarbons to higher concentrations, and retain them longer, than other marine organisms. Female polychaetes do not release accumulated hydrocarbons until they spawn, which supports the hypothesis that the hydrocarbons stored in lipid deposits are released when these reserves are mobilized. Laboratory experiments with several species of fish present along the coast of California indicate that naphthalene and benzo(a)pyrene were taken up, metabolized in the liver, and the byproducts excreted through the bile (Lee et al. 1972).

Habitat alteration as a result of muds and cuttings discharges occur during drilling of wells, most of which take place within a short time after installation of the platform. Thereafter, drilling and associated discharges are at intervals and of smaller magnitude. The cuttings are heavier and accumulate under or in the immediate vicinity of the platform while muds can settle out as much as 2 to 3 miles away, depending on oceanographic conditions (Menzie 1982; Sauer 1983). The physical and chemical alteration of bottom sediments can alter the benthic invertebrate communities present, and thus the food for organisms that feed on them. The area affected relative to the amount of unaffected habitat in the project area is very small and would have no measurable effects on the food base of the listed species addressed in this biological assessment.

3.1 PROJECT EFFECTS

The following provides a discussion of potential impacts to the species covered by this biological assessment. A summary of these impacts is shown in Table 3.

Sea Turtles

Individuals of the four sea turtle species are likely to be present within the project area on a very infrequent basis. Thus, the potential for exposure to pollutants from the platform discharges is highly unlikely. No foraging or breeding is expected in the project area, and no impacts to these species are anticipated.

Guadalupe Fur Seal

Guadalupe fur seals potentially could forage in the vicinity of the OCS oil and gas facilities, but few individuals are likely to do so considering the low numbers reported for the region and their use of the islands that are farthest offshore. No direct toxic effects to any individual Guadalupe fur seals that might use or pass through waters adjacent to the OCS oil and gas facilities would be expected, even if the seals entered the mixing zone for the discharges. Indirect toxicity resulting from ingestion of fish that have bioaccumulated pollutants is also highly unlikely. Heavy metals and hydrocarbons are not expected to be accumulated by their prey to toxic levels due to mechanisms for removal of these substances as described above.

Steller's Sea Lion

A few individual Steller's sea lions may periodically visit the northern part of the project area and could forage in the vicinity of the OCS oil and gas facilities. No direct or indirect toxic effects are expected for the reasons described above for the Guadalupe fur seal.

Sei Whale

Sei whales are not expected to frequent the OCS oil and gas facility areas based on their known distribution in the project area. Any individuals that did happen to pass adjacent to a platform would not be adversely affected by the discharges due to the short exposure time and small area of the mixing zone where chemicals would be the most concentrated. Metals and hydrocarbons are not expected to be accumulated by their food organisms, and most of their food would not come in contact with the discharges from the OCS oil and gas facilities. Thus, no impacts are expected for this species.

Right Whale

The potential for a right whale to be in the vicinity of the OCS oil and gas facilities is extremely remote since only two sightings have been reported for the Southern California Bight. Right whales

Table 3. Summary of Impacts

Species	*Impact*
Green sea turtle	No impacts. Few transitory individuals in project area.
Loggerhead sea turtle	No impacts. Few transitory individuals in project area.
Olive Ridley sea turtle	No impacts. Few transitory individuals in project area.
Leatherback sea turtle	No impacts. Few transitory individuals in project area.
Guadalupe fur seal	No impacts. Few individuals in project area unlikely to forage around OCS oil and gas facilities. No bioaccumulation of pollutants from OCS oil and gas facilities expected.
Steller's sea lion	No impacts. Few individuals in project area unlikely to forage around OCS oil and gas facilities. No bioaccumulation of pollutants from OCS oil and gas facilities expected.
Sei whale	No impacts. Not likely to occur near OCS oil and gas facilities. No bioaccumulation of pollutants from OCS oil and gas facilities expected in planktonic organisms used as forage.
Blue whale	No impacts. Not likely to occur near OCS oil and gas facilities. No bioaccumulation of pollutants from OCS oil and gas facilities expected in planktonic organisms used as forage.
Finback whale	No impacts. Not likely to occur near OCS oil and gas facilities. No bioaccumulation of pollutants from OCS oil and gas facilities expected in planktonic organisms used as forage.
Humpback whale	No impacts. Not likely to occur near OCS oil and gas facilities. No bioaccumulation of pollutants from OCS oil and gas facilities expected in planktonic organisms used as forage.
Right whale	No impacts. Not likely to occur near OCS oil and gas facilities. No bioaccumulation of pollutants from OCS oil and gas facilities expected in planktonic organisms used as forage.
Sperm whale	No impacts. Species not expected to forage in the vicinity of OCS oil and gas facilities.
Steelhead trout	No impacts. Few individuals in project area unlikely to forage around OCS oil and gas facilities. No bioaccumulation of pollutants from OCS oil and gas facilities expected. No interference with migrations.
Chinook salmon	No impacts. Few individuals in project area unlikely to forage around OCS oil and gas facilities. No bioaccumulation of pollutants from OCS oil and gas facilities expected. No interference with migrations.

forage on planktonic invertebrates that would not be likely to bioaccumulate pollutants from the discharges because they would not be in the project area for any length of time, if at all. Consequently, no direct or indirect toxicity from the pollutants in the discharges would be expected.

Sperm Whale

Sperm whales are not expected to occur in the vicinity of the OCS oil and gas facilities considering their preference for deep waters beyond the continental shelf or deep canyons. Their primary food, squid, are also not known to be particularly abundant near the OCS oil and gas facilities. Thus, the discharges from the OCS oil and gas facilities are not expected to have any effects on this species.

Blue Whale

Although blue whales are regularly sighted in the Santa Barbara Channel area during the summer to fall, discharges from the OCS oil and gas facilities are unlikely to have any effects on them. The whales generally stay further offshore than the OCS oil and gas facilities and, thus, are not likely to swim through the mixing zone for the discharges. Blue whales forage on planktonic organisms that would be unlikely to bioaccumulate pollutants from the discharges because they would not be in the vicinity of the OCS oil and gas facilities long enough to take up pollutants to any degree.

Finback Whale

Discharges from the OCS oil and gas facilities are expected to have no effects on finback whales. Few if any individuals are likely to feed in the vicinity of the OCS oil and gas facilities since most remain further offshore. This species is present primarily during the summer months and not all year. In addition, the planktonic organisms they feed upon are not expected to accumulate substantial amounts of toxins (metals or hydrocarbons) from the discharges because permit conditions require discharge concentrations to be low and planktonic organisms would remain in the immediate vicinity of the OCS oil and gas facilities for a short time due to oceanic currents.

Humpback Whale

Humpback whales can occur in the project area throughout the year, but few are expected to be in the vicinity of the OCS oil and gas facilities since most sightings are near the offshore islands. As described above for the other baleen whales, the potential for impacts to this species is very low. No direct or indirect toxicity is expected to occur as a result of discharges from the OCS oil and gas facilities.

Steelhead Trout

At least some individual steelhead trout could forage near the OCS oil and gas facilities during the ocean phase of their life cycle, but the number of steelhead is expected to be very low considering the small size of the steelhead populations in the project area and the large amount of potential foraging habitat away from the OCS oil and gas facilities. Direct toxicity to individual steelhead foraging in the immediate vicinity of the OCS oil and gas facilities is not likely due to the discharge requirements and rapid dilution of the discharges. Toxicity resulting from ingestion of fish that have bioaccumulated pollutants is also highly unlikely. Heavy metals and hydrocarbons are not expected to be accumulated by their prey to toxic levels due to mechanisms for removal of these substances as described above. The OCS oil and gas facilities would not interfere with migration or spawning of steelhead.

Chinook Salmon

The potential for impacts to Sacramento River winter-run chinook salmon is negligible. Few if any winter-run chinook salmon are likely to forage in the vicinity of the OCS oil and gas facilities, and direct or indirect toxicity to any that do is not expected for the reasons described above for steelhead trout. The OCS oil and gas facilities would not interfere with migration or spawning of chinook salmon.

3.2 CUMULATIVE IMPACTS

Discharges from the OCS oil and gas facilities to be covered by the proposed general permit have the potential to act cumulatively with discharges from platforms in state waters (one in the Santa Barbara Channel and two off Huntington Beach), marine vessels, and wastewater treatment plants. Since all of the platforms have been in place for a number of years, most of the drilling muds and cuttings expected to be generated by these facilities have already been discharged. Thus, the discharges of muds and cuttings from the OCS oil and gas facilities would add a small increment to the existing accumulation in the project area. The other platforms also have discharges, other than muds and cuttings, similar to those from the OCS oil and gas facilities. These discharges plus those from wastewater treatment plants, and vessels all add to the pollutant load in coastal waters that could affect federally-listed species. The location of these discharges is spread out in coastal waters such that most do not directly interact. Dilution, chemical reactions, and settling of suspended materials reduces the concentration of pollutants in oceanic waters, while some of the pollutants accumulate in the sediments. Those entering the sediments may ultimately end up in the adjacent basins (SAI 1984). Discharges from the OCS oil and gas facilities would add to this pollutant load. However, the amount of pollutants to be discharged from the operating platforms is expected to be relatively small compared to the total pollutant load from all sources. Thus, the continued discharge from the OCS oil and gas facilities would not add substantially to cumulative pollution of the project area and would not adversely affect any listed species in the area.

4.0 MEASURES TO REDUCE IMPACTS TO SPECIES

No impacts were identified that would require mitigation to reduce the level of impact. The potential for impact is very low for all listed species, and measures are not needed to reduce this potential further.

5.0 REFERENCES

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